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articles and volumes is 534, of which 109 are on comparative anatomy and general anthropology, 48 on general craniology, 35 on special craniology, 27 on ethnology, and 19 on miscellaneous subjects.

As mentioned above, the Saturday lectures can be procured from Judd & Detweiler, of Washington, at 75 cents for the volume containing the whole course.

GEOLOGY AND PALÆONTOLOGY.

LESQUEREUX ON THE TERTIARY FLORA AS RELATED TO THE TERTIARY ANIMALS OF THE WEST.—In regard to Professor Cope's recent papers on the Cretaceous and Tertiary groups of the Western Territories, Mr. Lesquereux writes us that he has carefully examined his conclusions and must say that he approves them fully and that they agree well with his own. "As to the Laramie group, while I call it Eocene, Cope must decide according to the animal remains. I must stick to the plants. The difference is only in name and it will be better understood hereafter. For the so-called Green river group, I have always found a great difference of type between the plants of Green river station, including Alkali station, and those of White river, Florissant and Elko. I therefore readily admit, as I have already done, two different stages of this group, as indicated by the plants. A lower one for Green river station and Alkali and an upper stage for that of White river, so far we agree.

"But now let us see what the Miocene will say. From the Laramie group upwards there is already a number of permanent types recognized in subsequent formations. There is a marked identity between the plants of the Laramie group and those of the Union group, and then between those of the last group and White river, we find the Lower Miocene very clearly characterized, then follows the Middle Miocene or the Carbon and Alaska groups, and then the upper Miocene or Pliocene of the Chalk bluffs of California. All these facts considering the character of the plants, constitute by persistent species a continuous flora which it is extremely difficult to separate. Indeed if we admit that all the plants described from the Union group represent the same geological stage, we can scarcely draw any lines of separation for the Tertiary, which continues uninterruptedly from the Eocene of Black Butte and Golden City to the flora of our present epoch. Thus our present living flora would appear quite as Cretaceous in some of its characters as that of Golden City.—*F. V. Hayden.*

THE GEOLOGICAL AND NATURAL HISTORY SURVEY OF CANADA.—The Report of Progress of this Survey for 1879–80 forms a bulky octavo, accompanied by five maps of the regions explored, and illustrated by nineteen plates. The work of the Geological corps in 1880 embraced surveys in the Northwest Territories, Manitoba,

Quebec, New Brunswick, Nova Scotia and the Magdalen islands. The report embodies the results of an exploration from Fort Simpson on the Pacific to Edmonton on the Saskatchewan, conducted in 1879 by Dr. Geo. M. Dawson, with maps containing all the available information regarding a region of about 130,000 square miles. The Skeena river is the most important stream of British Columbia north of the Fraser, with the tributaries of which its affluents interlock. About 2000 Indians of the Tshimsian and and Tinneh stocks are the sole inhabitants of the region. The Douglas fir or "Oregon pine" finds its eastern limit near McLeod's lake, which empties into the Parsnip, a branch of Peace river. The area of actually cultivable land on this river is estimated at 23,500 square miles. The fossil plants of the Peace river district represents a flora akin to that of the Dakota of the United States, and is the oldest in which broad-leaved exogens of similar types to those existing predominate. Dr. Dawson appends some valuable notes on the distribution of some of the more important trees of the region, such as the Douglas fir (*Pseudotsuga Douglasi*), which attains occasionally a height of over 300 feet, and frequently surpasses eight feet in diameter; *Tsuga Mertensiana*, the western hemlock, which near the coast attains a height of 200 feet, *Thuja gigantea*, which on the coast not unfrequently surpasses fifteen feet in diameter and 100 to 150 in height, and other conifers of smaller size. Extensive lignite deposits exist in the Tertiary on the Souris river, and among the fossil plants of this district are *Platanus nobilis* (Newberry), the leaves of which are a foot in diameter, a *Sequoia*, and a sassafras.

Dr. Robert Bell contributes an interesting report upon Hudson's bay, and some of the lakes and rivers to the west of it. This body of water, no part of which is in the Arctic circle, and the southern extremity of which is south of London, measures about 1000 miles in length to the end of James bay, is over 600 miles in width, and has an area of about 500,000 square miles, or upwards of half that of the Mediterranean. Its drainage basin extends eastward to the center of Labrador, and westward to the Rocky mountains, while southward it is extended by the Winnipeg basin, emptying by the Nelson river, as far as latitude 45°. It thus includes nearly 3,000,000 of square miles, a great part of which enjoys a temperate climate, while large tracts are very fertile. About thirty rivers of considerable size flow into Hudson's bay. The Albany and the Churchill have the longest courses, but the muddy Nelson, though only 400 miles long, discharges the greatest body of water. The Albany can be navigated by shallow draft steamers for 250 miles, the Nelson for 70 or 80, while the Churchill, a beautiful clear-water stream, somewhat larger than the Rhine, has at its entrance a splendid harbor. Geologically Hudson's bay lies within the Laurentian, the Winnipeg division excepted. To the south and south-west of James

bay much of the land is good; to the south-west the country is well wooded, and valuable minerals, including iron-stone, galena, gypsum, petroleum-bearing limestone, etc., are known to exist. The land around Hudson's bay is rising from five to ten feet in a century. It is not improbable that, possessing a sea-port in the very center of the continent, 1500 miles nearer than Quebec to the fertile lands of the Northwest territories, Hudson's bay may prove the future highway between those territories and Europe.

This portion of the report concludes with a memoir upon the northern limits of the principal forest trees of Canada; a list of thirty-eight species of fossils collected in Manitoba, principally cœlenterates, brachiopods and gasteropods; a list of 261 species of plants collected at various spots around Hudson's bay in 1880, and a catalogue, by Dr. J. L. LeConte, of the coleoptera collected between Lake Winnipeg and Hudson's bay. Other appendices are devoted to the mollusca, the analysis of the waters of Hayes' and Nelson rivers, and weather statistics.

The Magdalen islands are thirteen small islands in the Gulf of St. Lawrence, inhabited principally by French Acadians, and capable of becoming an unrivaled sea-side resort on account of the clean sandy beach backed by rich greensward.

ABSENCE OF ANCIENT GLACIERS IN EASTERN ASIA.—In an article on glaciers and glacial periods in their relations to climate, in *Nature*, A. Wœikof refers to the fact that the great interior plateaux of Central Asia are too dry for glaciers. China, Manchooria and Amoor are destitute of glaciers owing to the want of moisture in the winter time, dry north-west winds then prevailing. This has been the case since the Pliocene period. Pumphelly and Richthofen found no traces of ancient glaciers in China nor on its western and northern borders, neither did Dr. Schmidt find any in the Amoor. As to the plateaux of Central Asia, they must have been exceedingly dry since the rise of the Himalaya and Karakoram to the south and the Pamir heights to the west of them, and thus have had nothing corresponding to the later glacial periods of Europe and North America.

A NEW GENUS OF TÆNIODONTA.—*Tæniolabis sulcatus*, gen. et sp. nov. *Char. gen.*—This genus is established on a tooth whose position is on the arc of the alveolar line which connects the molar and middle incisor regions. It is probably either the third incisor of the superior or inferior series, or the canine of the inferior series. In either case it differs from the corresponding tooth of any known genera of *Tillodonta* or *Tæniodonta*. The long diameter of the root being placed antero-posteriorly, that of the crown makes with it an angle of 30°.

Section of the crown oval; the grinding surface scalpriform in the manner of a rodent incisor; but beveled on side of the long diameter instead of on the end as in that order. Enamel con-

sisting of a wide band on the external side of the tooth, which embraces more of the circumference near the apex than elsewhere. Apex grooved behind.

If this be an inferior canine tooth it differs from that of the *Tillodonta* in its large size and incisor-like form. It most resembles the external or third inferior incisor of *Calamodon*. From this it differs in the scalpriform wear, and the oval instead of triangular section, and in the absence of cementum layer.

Char. Specif.—The enamel band does not cover the entire width of the external face, but leaves exposed a part of the dental surface anterior and posterior to it except at the apex. At the latter point there are seven coarse shallow grooves of the enamel surface; the posterior of these split up below, and become narrowed, while the anterior run out at the more curved anterior edge of the enamel band. The posterior apical groove has a flat bottom. At the front of the apex the enamel is involute to the inner side for a short distance. The inner face of the tooth displays five facet-like bands of the dentinal surface, which soon disappear inferiorly.

Measurements.—Length of tooth (root restored) .058; length of enamel band .031; width of enamel band at middle .0095; diameters of middle of tooth, anteroposterior .0130, transverse .009 long; diameter of apex of tooth .008.

This tooth indicates a new and interesting type, perhaps of *Calamodontida*, and one of which more information will be awaited with interest. Judging from the size of the tooth its possessor was as large as a sheep. From the Puerco Eocene of New Mexico, from D. Baldwin.

GEOLOGICAL NEWS.—The Philosophical Transactions of the Royal Society of London, 1880, contains Part x of Professor W. C. Williamson's researches into the organization of the fossil plants of the coal measures. The memoir is illustrated by eight plates. Certain small objects with projecting spines from the coal measures have been described as radiolarian, but Professors Haeckel and Strasburger concur with the writer in believing them vegetable. There is strong cause for the belief that they are cryptogamic macrospores, and Professor Strasburger suggests that their nearest allies may possibly be *Azolla* and other rhizocarpous genera.—In the same transactions Professor Owen gives a description of some remains of an extinct gigantic land-lizard (*Megalanía prisca* Owen) a contemporary in Australia with correspondingly large marsupials, also now extinct. *Megalanía* possessed upon its skull several horns, provided with osseous cores. The principal of these horns correspond with those of the living small Australian lizard, *Moloch horridus*, but the horn-cones of the latter are formed of fibrous corium, without bone-deposits. The skull is 1 foot 10½ inches wide. The premaxillaries are eden-

tulous and sheathed with horn. The creature seems to have been phytophagous, and its defensive weapons probably preserved it until it finally fell before the Australian so-called "Aborigine." The memoir is illustrated with several plates.—The Geological Magazine, April, 1882, contains contributions to the palæontology of the Yorkshire oolites, by W. H. Hudleston. This is one of a series, and treats of the Gasteropoda. The zones which contain Gasteropoda are the Dogger, with *Nerinea cingenda* and numerous other shells; the Millepore bed; the Scarborough or gray limestone; the Kelloway rock, with numerous *Trigonia*; the Oxford clay; and the lower Calcareous grit. Estuarine beds separate the lowest four of these. In all the beds the Cephalopoda are more conspicuous than the Gasteropoda. In the same magazine are "Some Points in the Geology of Anglesey," by Dr. Roberts, forming part of a discussion respecting the nature of certain beds; figures and descriptions of some fossils from the red beds of the Lower Devonian, Torquay, by R. Etheridge; a note on *Homalonotus Champenownei*, by H. Woodward, with a figure of the tail; remarks on the classification of the European rocks known as Permian and Trias, by the Rev. A. Irving; a continuation of W. Flight's history of meteorites; and the concluding part of the life of Linnarson, by Professor Chas. Lapworth. Mr. Irving's paper is a review of the arguments respecting "Permian," as it was named by Sir Roderick Murchison. In Germany these rocks are known as the Dyas, and consist of "two series of strata sharply distinguished from each other, both petrographically and palæontologically," as remarked by Professor Credner, of Leipzig. The argument will be continued in the next number. Mr. Mudd suggests that what is known to engineers as "water-hammer action" may come into play as a factor in producing the phenomena of earthquakes and volcanoes.—At a recent meeting of the Geological Society of London, Mr. D. Macintosh remarked upon some additional discoveries of high level marine drift in North Wales.—Professors King and Rowney have recently published a work with a title too long to transcribe, upon ophites in general and *Eozoön* in particular. The reviewer of this work in the *Philosophical Magazine* states that the structures figured by the authors have only a rough general resemblance to those claimed to be organic.—In the *American Journal of Science*, Professor J. D. Dana continues his series of articles upon the flood of the Connecticut River valley from the Quarternary glacier. Writing of the retreat of the glacier, he gives a most interesting account of the present condition of Greenland, with a shaded map of its surface. In the same periodical Ben. K. Emerson describes the dykes of micaceous diabase that penetrate the bed of zinc ore at Franklin Furnace, N. J., and M. W. Iles treats of the occurrence of vanadium in the ores at Leadville. Mr. C. A. White explains the continuity of genetic

lines of gill-bearing fresh-water mollusca, now separated from each other by barriers of land and sea that they are incapable of passing, by showing that the rivers in which kindred forms occur, once formed part of the drainage of inland lakes that have since become obliterated, and thus there was formerly a continuity which is now destroyed.—Chas. U. Shepherd follows with a notice of Monetite and Monite, two new minerals obtained from the twin islands Mona and Moneta, near Porto Rico, W. I. Both are phosphate of lime, formed in the caverns of limestone rock by the infiltration of the soluble ingredients of the bird-guano upon the surface.—Dr. Lemoine has communicated to the French Academy the result of his late palæontological researches upon the mammals of the Eocene beds around Rheims. The study of cerebral casts of *Arotocyon* and *Pleuraspidothorium* show relations to the embryonal brains of living mammals, and to those of certain marsupials, since the cerebral hemispheres leave the quadrigeminal tubercles completely uncovered. The dentary formula of *Pleuraspidothorium* and *Plesiadapis* recalls that of certain Australian phalangids. M. Lemoine has formed the genus *Adapisorex* to include some very small mammals, equally related to the Phalangidæ, found by him in the environs of Rheims.—The Proceedings of Acad. Nat. Sci. Phil., contain Part II. of a revision of the Palæocrinoidea, by Chas. Wachsmuth and F. Springer. This extensive paper occupies 238 pages, and is illustrated by three plates. It is devoted to the families, Platycrinidæ, Rhodocrinidæ, and Actinocrinidæ. Two species of *Batocrinus*, and three of *Eretmocrinus*, all from the Burlington and Keokuk limestones of Indiana and Iowa, are described. In the same Proceedings, Angelo Heilprin has a "Revision of the Cississippi Tertiary Pectens of the United States;" "Remarks on the Molluscan genera *Hippagus*, *Verticordia*, and *Pecchiola*;" a "Note on the Approximate Position of the Eocene Deposits of Maryland," in which those deposits are referred to a horizon nearly equal to that of the Thanet sands and London clay of England and the Braccheux sands of the Paris basin, that is, near the base of the Eocene series; and a "Revision of the Tertiary species of *Arca*."

MINERALOGY.¹

PROCEEDINGS OF THE MINERALOGICAL SECTION OF THE PHILADELPHIA ACADEMY OF NATURAL SCIENCES.—The second number of the Proceedings of the Mineralogical and Geological Section of the Academy of Natural Sciences has just been published. The first number was published in 1880, and contained the Proceedings from 1877 to 1879, inclusive, consisting of fifty-one articles, a number of which have been noticed in foreign periodicals.

¹Edited by Professor H. CARVILL LEWIS, Academy of Natural Sciences, Philadelphia, to whom communications, papers for review, etc., should be sent.